

It is claimed:

1. A process for reducing sulfur content in a hydrocarbon feedstock containing sulfur, the process comprising:
 - (a) contacting the hydrocarbon feedstock with a Fractionation Zone to produce at least Fraction (1) and Fraction (2), wherein each fraction contains sulfur, and Fraction (1) has a final boiling point that is lower than that of Fraction (2),
 - (b) contacting Fraction (1) with a Membrane Separation Zone, said Membrane Separation Zone containing a membrane having a sufficient flux and selectivity to separate a sulfur-enriched permeate fraction and a sulfur deficient retentate fraction, and said sulfur enriched permeate fraction being enriched in sulfur compared to Fraction (1);
 - (c) recovering the sulfur deficient retentate fraction;
 - (d) contacting said sulfur enriched permeate fraction of (b) and said Fraction (2) of (a), separately or as a combination, with a Desulfurization Zone to reduce the sulfur content of the sulfur enriched permeate fraction and Fraction (2); and
 - (e) recovering a hydrocarbon stream from the Desulfurization Zone wherein the hydrocarbon stream has a reduced sulfur content, relative to the sulfur-containing feedstock.
2. A process according to Claim 1 wherein the membrane in (b) comprises a member selected from the group consisting of polyimide, polyurea-urethane, polysiloxane and combinations thereof.
3. A process according to Claim 1 wherein the membrane in (b) comprises a polyurea-urethane.
4. A process according to Claim 1 wherein the hydrocarbon feedstock is a naphtha feed.

5. A process according to Claim 4 wherein the naphtha feed contains at least 150 ppm sulfur.
6. A process according to Claim 4 wherein the naphtha feed is an effluent from a fluidized catalytic cracking unit.
7. A process according to Claim 1 wherein Fraction (1) and Fraction (2) are produced in the Fractionation Zone of step (a) under catalytic distillation conditions.
8. A process according to Claim 1 wherein Fraction (1) has a final boiling point in the range of about 50°C to about 200°C.
9. A process according to Claim 1 wherein Fraction (1) has a final boiling point in the range of about 50°C to about 130°C.
10. A process according to claim 1 wherein Fraction (1) contains sulfur-containing aromatic hydrocarbons.
11. A process according to claim 8 wherein Fraction (1) contains sulfur-containing aromatic hydrocarbons.
12. A process according to claim 4 wherein Fraction (1) contains sulfur-containing aromatic hydrocarbons.
13. A process according to claim 7 wherein Fraction (1) contains sulfur-containing aromatic hydrocarbons.
14. A process according to Claim 10 wherein Fraction (1) contains thiophene or alkylthiophene.

15. A process according to Claim 11 wherein Fraction (1) contains thiophene or alkylthiophene.
16. A process according to Claim 12 wherein Fraction (1) contains thiophene or alkylthiophene.
17. A process according to Claim 13 wherein Fraction (1) contains thiophene or alkylthiophene.
18. A process according to Claim 17 wherein Fraction (1) is substantially free of mercaptan-containing compound.
19. A process according to Claim 1 wherein Fraction (2) contains a member selected from the group consisting of benzothiophene, alkylbenzothiophene, and thioethers.
20. A process according to Claim 1 wherein the sulfur deficient retentate fraction of step (b) contains 70 ppm or less sulfur.
21. A process according to Claim 1 wherein the Membrane Separation Zone operates under pervaporation conditions.
22. A process according to Claim 1 wherein the membrane has a sulfur enrichment factor of at least 1.5.
23. A process according to Claim 1 wherein sulfur deficient retentate fraction of (b) is transferred as a gasoline blend stock.
24. A process according to Claim 1 wherein the Desulfurization Zone of (d) operates under hydrodesulfurization conditions.

25. A process according to Claim 1 wherein the Desulfurization Zone of (d) operates under catalytic hydrodesulfurization conditions.
26. A process according to Claim 25 wherein the sulfur content of reduced sulfur-containing hydrocarbon streams from the Desulfurization Zone in (f) is 50 ppm or less sulfur.